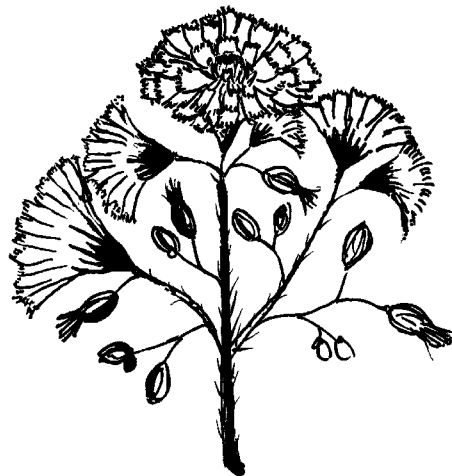


Hawkweed Biological Control Program

End of the Year Report 2003



Submitted by the Hawkweed Biological Control Consortium

Linda M. Wilson, Consortium Coordinator, University of Idaho, P.O. Box 442339, Moscow, ID 83844-2339

Hawkweed Biological Control Program

Year End Report

2003

INTRODUCTION:

Hawkweeds are creeping, herbaceous, perennial weeds that are highly invasive in the United States and Canada. Infestations of hawkweed typically occur as large monocultures in both open and remote locations. A biological control program was begun in 1999 to expand the management options for this weed. Four insect species were selected for testing, the Hawkweed Gall midge, *Macrolabis pilosellae*, the hawkweed root-feeding hover fly, *Cheilosia urbana*, the hawkweed crown-feeding hover fly, *C. psilophthalma*, and the hawkweed gall moth, *Oxyptilus pilosellae*.

This report summarizes the investigation in 2003 of these hawkweed biological control agents to control and prevent the further spread of meadow hawkweed and other invasive hawkweeds in the US and Canada.

HAWKWEED BIOCONTROL INSECTS

The main goal of the Hawkweed Biological Control Consortium is to support and fund screening and ultimately importation of insects from Europe for biocontrol of invasive hawkweeds. The major accomplishment of the Hawkweed Biocontrol Program in 2003 was completion of the host-specificity testing of the two root-feeding flies (*Cheilosia urbana* and *C. psilothalma*). In addition, all of the test plants required for biocontrol testing of additional insects were acquired and shipped to the CABI Bioscience laboratory in Delémont, Switzerland, and to Montana State University. Research was near completed on the hawkweed gall midge (*Macrolabis pilosellae*). Open field tests of the insects were not completed in 2003 because of drought that resulted high rates of larval mortality in test plants. Thus, these tests will be repeated in 2004. Preliminary tests of the new gall wasp species (*Aulacidea pilosellae*) that attacks meadow hawkweed (*Hieracium caespitosum*) were conducted.

1: The Hawkweed Gall Wasp (*Aulacidea subterminalis*)

Description: This insect lays its eggs at the tips of stolons in orange hawkweed. Larvae burrow into and feed on the young plant tissue. In response, the plant produces a hard gall around the larva. There can be up to 20 larvae in individual galls in the gall clusters. The affected stolon does not produce a daughter plant, and the main plant is weakened and smaller.

Research on this insect is being conducted at Montana State University. Testing of this insect is expected to be completed in 2004.



2: The Hawkweed Root-Feeding Hover Fly (*Chelisia urbana*) and the Crown-Feeding Hover Fly (*Chelisia phthophalma*)

Description: There are two species of the fly – each does different damage to the plant. One species lays its eggs on the soil surface and the young larvae burrow into the soil, feeding on hawkweed roots. This is a potentially important and effective insect because meadow hawkweed produces root buds that produce new plants. Studies will show the amount of damage to the root buds – if damage is significant, the vegetative spread of meadow hawkweed may be severely curtailed. The other fly lays its eggs at the root crown and the larvae burrow in the soft tissue and eat developing buds – as a result fewer flower stalks are produced and fewer stolons are produced. Plants are weakened and smaller after attack by these flies.



3. The Hawkweed Gall Midge, *Macrolabis pilosellae*

Description: This gall midge oviposits in young growing point (terminal and axillary buds such as stolon tips and rosette centers). Due to larval feeding, leaves either do not unfold at all or do so only partly. Impact studies carried out with *H. pilosella* showed that *M. pilosellae* can reduce stolon length, the number of flowerheads, aboveground biomass and the total number of leaves.



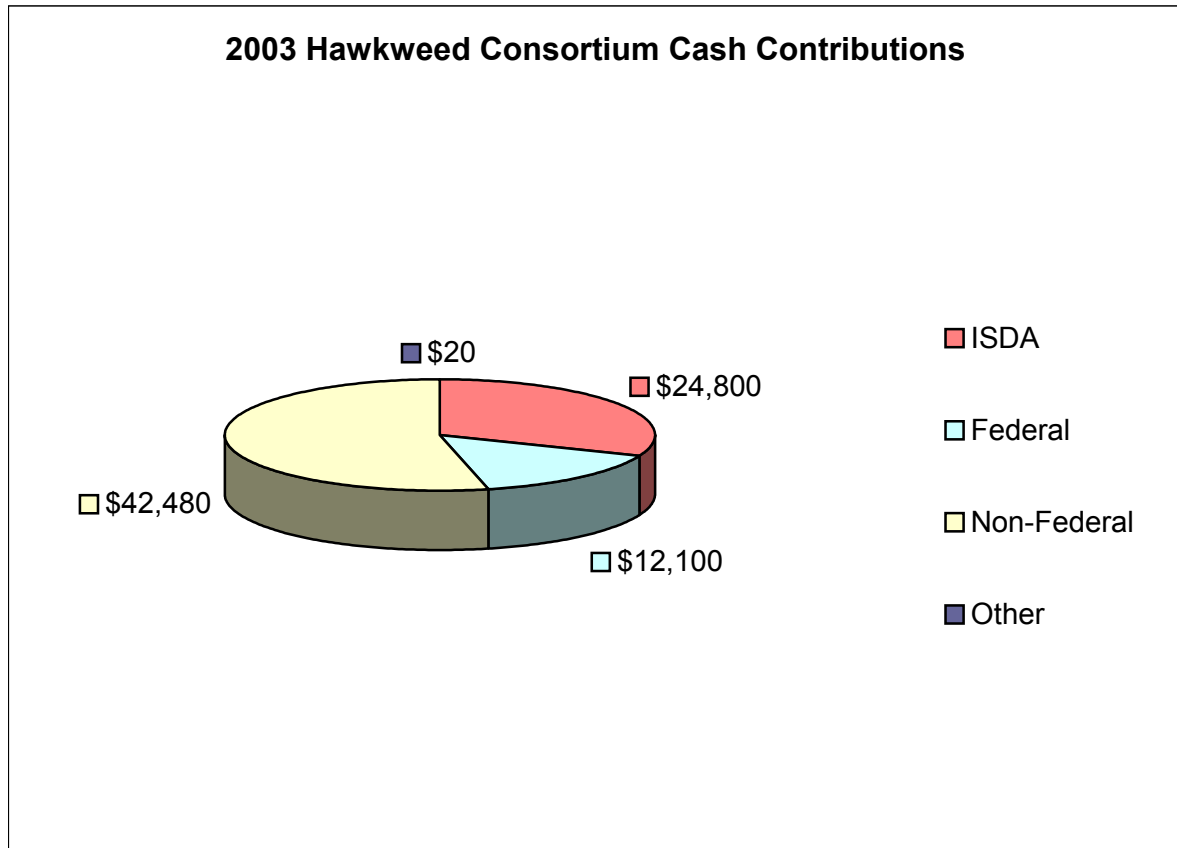
Laboratory and field testing is completed for this insect. Field testing will be continued in 2004. We expect completion of these tests in 2004. A colony of insects is being maintained at CABI Bioscience.

COLLECTION OF NORTH AMERICAN TEST PLANTS

L. Wilson and various colleagues identified the location of test plants throughout the US and made 4 collection trips. Plants were collected from western Washington, southeastern Oregon, Monterey, California, Michigan, Wisconsin, British Columbia and Alberta. Plants were packaged and sent to both CABI Bioscience lab in Switzerland and the quarantine lab at Montana State University in Bozeman, MT. In all, 25 species of native hawkweeds, and other closely related genera (such as *Taraxacum* and *Crepis*) were collected and shipped.

Contributions and Expenditures 2003

The following chart shows a break down of all cash and in-kind contributions obtained for the hawkweed biocontrol program from members of the Hawkweed Biological Control Consortium in the 2003 season. A total of \$79,400 dollars was received.



Hawkweed Biological Control Consortium

2003 *Member List*

Organization	Contact Name	Contact Phone
Idaho Department of Agriculture	Brenda Waters	208-332-8667
Idaho Department of Lands	Dean Johnson	2008-245-4551
Washington State Noxious Weed Control Board	Stephen McGonigal	360-902-2053
Wash. St. Commission on Pesticide Regulation	Alan Schreiber	509-266-4305
Montana State University	Jeffrey Littlefield	406-994-4722
Stevens County, WA	Sue Winterowd	509-684-7950
Pend Oreille County, WA	Sharon Sorby	509-447-2401
Benewah County, ID	Dale Moreland	208-274-2101
British Columbia Ministry of Forests	Dwayne Brooke	250-828-4127
British Columbia Ministry of Agriculture, Food and Fisheries	Roy Cranston	604-556-3066
Inland Empire CWMA	Sharon Sorby	509-447-2401
Palouse CWMA	Susan Quallman	208-875-1131
Private landowner	Robert and Carol Randall	208-765-0584
Bureau of Land Management	Bill Cook	208-769-5042
US Forest Service	Richard Reardon	304-285-1566
University of Idaho	Linda Wilson	208-885-9489

Hawkweed Biological Control Program

Summary of Measurable Benefits

Excerpted from Idaho Strategic Plan

VII. RESEARCH AND TECHNOLOGY DEVELOPMENT

A. Obtain Support for Accelerated Research and Technology Development

1. Issue: *Inadequate public understanding of the scope and severity of the noxious weed problem and the concurrent lack of funding has delayed needed research,.*

• **Action:** Help all Idaho citizens and landowners understand the impacts of the explosive spread of noxious weeds and the consequences for failure to allocate sufficient resources to slow and stop their spread. • Assist in developing applied research priorities and direction that will contribute to an effective statewide weed program. Encourage congressional representatives and state legislators to support increased budgets for university and agency noxious weed research and technology development.

The hawkweed biocontrol program is commensurate with Part 7 of the Idaho Strategic Plan, which supports research and technology development of weed management strategies. Hawkweed biological control is new technology for Idaho and throughout North America. It is consistent with the stated need for funding for invasive perennial weeds on non-cultivated lands, such as the complex of invasive hawkweeds in Idaho.